INFORMATION PAPER

Military Vaccine Agency 6 January 2005

Subject: Rubella Infection and Rubella Vaccine

1. Purpose. To describe rubella disease and the vaccine to prevent it.

2. Facts.

a. Microbiology. Rubella virus is a togavirus, genus rubivirus. Rubella is a mild but highly contagious viral infection characterized by low-grade fever, swollen lymph nodes, rash, and joint pain in adults. Symptoms may be mild, and up to 50% of infections may be without noticeable symptoms. Rubella infection in early pregnancy can lead to birth defects that may result in fetal death, spontaneous abortion, or premature delivery. Rubella is also known as “three-day measles” or “German measles.” Avoid using these nicknames to avoid confusion with measles, which is a different viral infection.

b. Epidemiology. Rubella is spread from person-to-person via airborne respiratory droplets from coughing or sneezing. Reported cases (57,686) peaked in the United States in 1969, before rubella vaccine became available. By 2002, only 18 cases were reported.

c. Vaccine. The rubella vaccine now licensed in the United States contains live attenuated (weakened) viruses grown in WI-38 human diploid cells. The vaccine contains no duck, chicken, or egg proteins. It can be packaged alone (*Meruvax-II*, Merck), in combination with mumps vaccine (*Biavax*, Merck), or combined with both measles and mumps vaccines in a trivalent form known as MMR (*M-M-R-II*, Merck). The vaccine is equally effective and safe in any of the combinations. In recent years, Merck has distributed only MMR in the United States. The Food & Drug Administration licensed Merck to produce monovalent rubella vaccine in 1969 and MMR in 1971 (with formulation improvements to both products in 1979). The vaccine contains a small amount of albumin, neomycin, sorbitol, and gelatin.

d. Immunization. MMR is given subcutaneously as a 0.5-mL dose. Give children the first dose at 12 to 15 months of age and the second dose at 4 to 6 years of age. Also give MMR to children who have not received the second dose by the 11- to 12-year-old visit. Allow at least 4 weeks between the first and second dose. Adults born before 1957 are assumed to be immune to mumps by natural infection. Give adults born in 1957 or later who do not have medical restrictions at least one dose of MMR vaccine during their lifetime. Give two lifetime doses of MMR vaccine to certain adults born in 1957 or later, including healthcare workers, those who travel overseas, or those who attend post-secondary educational institutions. A second dose of MMR is also recommended for adults who have been recently exposed to measles or who are in an outbreak setting, were previously vaccinated with killed measles vaccine, were vaccinated with

an unspecified measles vaccine between 1963 and 1967, or plan to travel internationally.

e. Cautions. The following people should not receive MMR: people who had a serious allergic reaction to the vaccine or its components (e.g., gelatin), pregnant women or women who are considering pregnancy within the next month, and immune-suppressed people. Defer MMR vaccination for people who have moderate to severe acute illness. . People with severe allergies to eggs should not receive MMR vaccine, but are not barred from monovalent rubella vaccine.

f. Adverse Events. The most common adverse reactions after MMR are fever and rash, which are usually caused by the measles vaccine component. Inflammation of the parotid gland is rare after vaccination and is caused by the mumps vaccine component. Temporary swelling of lymph nodes sometimes occurs after vaccination and is most likely related to the rubella vaccine component. Joint aches or inflammation is reported in up to 25% of rubella-susceptible post-pubertal women who receive MMR or other rubella-containing vaccine.

g. DoD Policy. MMR is administered to all recruits, unless they have positive blood tests to all three components or documented evidence of two prior vaccinations. For other adults and children, DoD follows guidelines of the Advisory Committee on Immunization Practices (ACIP). In general, ACIP prefers use of MMR to monovalent or bivalent vaccines because it provides immunity to all three diseases.

3. References.

a. Advisory Committee on Immunization Practices (ACIP). Measles, mumps, and rubella: Vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps. MMWR 1998;47(RR-8):1-57. ftp.cdc.gov/pub/Publications/mmwr/rr/rr4708.pdf

b. CDC disease information. www.cdc.gov/ncidod/diseases/submenus/sub_rubella.htm

c. CDC Vaccine Information Statements: www.cdc.gov/nip/publications/VIS/

d. Package Insert: *M-M-R-II:* www.merck.com/product/usa/pi_circulars/m/mmr_ii/mmr_ii_pi.pdf

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